Electronic Version
Stylesheet Version v1.1.1

Claims

[c1] What is claimed is:

1. A method for determining a motion vector of a current block of a current frame for indicating a region in a reference frame comprising pixel information correlating to the current block, the current frame and reference frame being part of a sequence of frames forming a digital video, the method comprising:

correlating pixel information of the current block with pixel information of the reference frame indicated by a first motion vector of a block proximate to the current block to determine a first cost function;

correlating pixel information of the current block with pixel information of the reference frame indicated by a second motion vector to determine a second cost function, the second motion vector being of a block of the reference frame spatially coincident with the current block;

correlating pixel information of the current block with pixel information of at least a predetermined region of the reference frame to determine at least a third motion vector and correspondingthird cost function;

selecting at least one of the first, second, and third mo-

tion vectors having the lowest cost function as a candidate motion vector;

correlating pixel information of the current block with pixel information of regionsoffset from regions in the reference frame indicated by the candidate motion vectors to determine refined candidate motion vectors and corresponding refined cost functions; and

selecting the refined candidate motion vector having the lowest refined cost function as the motion vector of the current block.

[c2] 2. The method of claim 1 wherein correlation of pixel information is performed according to a sum of absolute differences or a sum of squared differences function.

[c3] 3. The method of claim 1 wherein a plurality of proximate blocks are correlated with, and the first motion vector and first cost function are selected from the proximate block having the lowest cost function.

[c4] 4. The method of claim 1 wherein a plurality of proximate blocks are correlated with, and the first motion vector and first cost function are selected from the proximate block having the lowest cost function, a mean motion vector of the proximate blocks being selected as the first motion vector if the corresponding mean cost function is the lowest cost function.

[c5] 5. The method of claim 1 wherein two of the first, second, and third motion vectors having the lowest cost functions are selected as candidate motion vectors.

[c6] 6. The method of claim 5 wherein nine predetermined regions are correlated with and two third motion vectors and correspondingthird cost functions are determined.

[c7] 7. The method of claim 6 wherein the two third motion vectors are selected from two regions of the nine predetermined regions having the lowest cost functions of correlation with the current block.

[c8] 8. The method of claim 1 wherein the first and second motion vectors are only under consideration for selection as the candidate motion vectors when the respective first and second cost functions are below a predetermined threshold.

[c9] 9. The method of claim 1 wherein determining the refined candidate motion vectors and corresponding refined cost functions is iteratively performed twice.